narrative of travel, but this is very well told, and many experiences which are likely to be of value to other wanderers in the somewhat intricate paths of the Nearer East are given prominence. Mr. Lukach has already written on Cyprus, and perhaps his chapter on that island in the present volume may be indicated as of special value, including as it does a brief historical review, but throughout the book, a medley as it must necessarily be, there is found a laudable tendency to avoid assuming for the reader a foreknowledge of the complex lines of Levantine history. For example, the note and "genealogical" table of the Eastern Churches on pp. 113, 114, will be welcome to those who have striven to comprehend the religious divisions of Eastern Christendom. The book is illustrated with many good photographs, mostly the author's own, and there is a small route-map.

(3) Mr. A. S. Meek has made extensive zoological collections for the Tring Museum, and in the present volume he narrates his adventures while doing so, and also, at the outset, gives some account of his preparation for a collector's career. We follow him, in his narrative, to New Guinea and to various island-groups in the region of that great island—the Trobriands, the Louisiades, the Solomons, &c. In New Guinea itself he has travelled widely, and not in British territory only; his two last chapters deal with expeditions into the heart of the Dutch area. Mr. Meek asserts that he can claim to be neither a man of science nor a descriptive writer; his colleagues at the museum, on the one hand, and his readers, on the other, may be willing to find undue modesty in the statement. Certainly he has provided the museum with much new material; an introduction to his book by the Hon. Walter Rothschild makes that clear, while so far as the literary claims of the work are concerned, the book has had the benefit of editorship at the hands of Mr. Frank Fox, who is well qualified for the task by his authoritative knowledge of Australasia. Mr. Meek's text unquestionably increases in interest as it progresses, and in addition to his personal adventures (from which, quietly narrated as they are, his own spirit of intrepidity emerges clearly enough) and his successes as a collector, a tribute is certainly due to his ability in dealing with the natives, on whose friendly aid—of the winning of which there is but one method and that the right one—he has often needed, and been able, to rely.

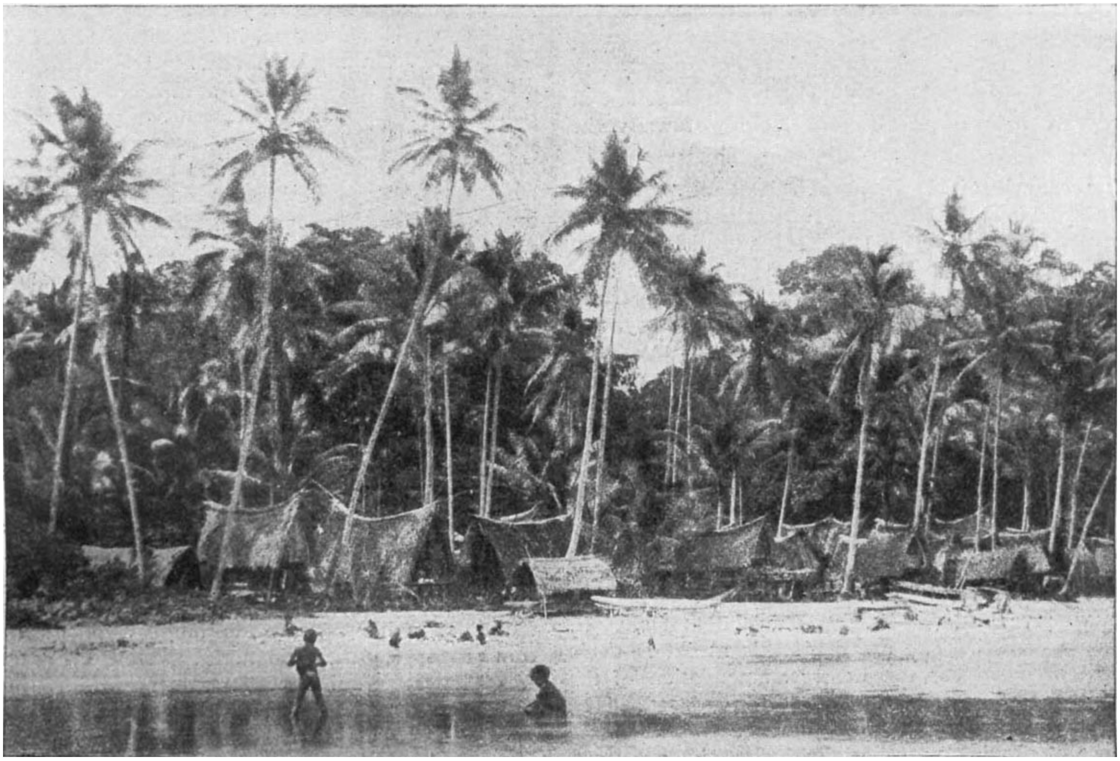

Fig. 2.—Scene, Trobriand Islands. From "A Naturalist in Cannibal Land."

NOTES.

The council of the Royal Meteorological Society has awarded the Symons gold medal to Mr. W. H. Dines, F.R.S., in recognition of the valuable work which he has done in connection with meteorological science. The medal will be presented at the annual meeting of the society on January 21, 1914.

The annual Huxley Memorial Lecture of the Royal Anthropological Institute will be delivered on Friday, November 14, by Prof. W. J. Sollas, F.R.S., who will take as his subject "Paviland Cave." Prof. A. Keith, F.R.S., president of the institute, will occupy the chair.

THE death is announced, at sixty-two years of age, of Mr. H. Herbert Smith, vice-president of the Surveyors' Institution, a member of the council of the Royal Agricultural Society, and Gilbey lecturer on the history and the economics of agriculture, Cambridge University, 1900–03.

THE Paris *Temps* has just instituted an inquiry in scientific, industrial and medical circles as to directions in which developments of research are most desired. The object is to suggest the most useful discoveries which it is possible to make in the present state of scientific knowledge, and to indicate those awaited eagerly by workers in such various branches of science as electricity, mechanics, chemistry, physics, bacteriology, astronomy, &c. The result of the inquiry will show the point of view from which, at the close of this year, men of science are looking toward the future.

THE council of the Yorkshire Naturalists' Union has elected Mr. T. Sheppard, of Hull, the president for next year. The Yorkshire Naturalists' Union is one of the most successful associations of its kind in Great Britain, and has published many important monographs on the flora and fauna of the county, and also issues *The Naturalist,* which is one of the oldest scientific monthly magazines in the country. The union has a membership of nearly four thousand, and about forty important natural history societies are affiliated with it.

THE Harveian oration was delivered before the president and fellows of the Royal College of Physicians, on October 18, by Dr. J. Mitchell Bruce, who took for his subject "The Origin and Nature of Fever." The president of the college, Sir Thomas Barlow, presented the Baly gold medal to Dr. J. S. Haldane, F.R.S. The award of this medal is made every alternate year, on the recommendation of the president and council, to the person who shall be deemed to have most distinguished himself in the science of physiology, especially during the two years immediately preceding the award.

THE report of the council of the Cardiff Naturalists' Society adopted at the recent annual meeting shows that the membership is now 505, of whom twenty are life members. We notice that the council in May, 1913, adopted a suggestion made by Principal Griffiths that steps should be taken towards securing an early visit to Cardiff of the British Association. At the subsequent meeting of the City Council the suggestion was approved. An invitation has been forwarded to the council of the British Association, but the earliest practicable date now vacant is 1919. The programme for the present session deals with a diversity of topics, among which various aspects of animal and plant life are prominent.

THE council of the Institution of Civil Engineers has made the following awards for papers published in the Proceedings without discussion during the session 1912–13:—A Telford gold medal to Mr. James Mackenzie (Johannesburg); Telford premiums to Messrs. H. Hawgood (Los Angeles), J. K. Robertson (Bombay), G. S. Perry (Sydney, N.S.W.), and Gervaise Purcell (Los Angeles); and the Crampton prize to Mr. William Mason (Liverpool). The council has made the following awards in respect of students' papers read before provincial associations of students during the past session:—The James Forrest medal and a Miller prize to Mr. P. M. Chadwick (Birmingham); and Miller prizes to Messrs. A. J. S. Pippard (Bristol), T. P. Geen (Bristol), C. E. Holloway (Bristol), J. W. Burns (Glasgow), and B. A. E. Heilig (Birmingham).

THE Faraday Society has arranged for a general discussion on the passivity of metals to be held on Wednesday, November 12, in the rooms of the Chemical Society, Burlington House. The president-elect, Sir Robert Hadfield, F.R.S., will preside, and the following provisional programme has been arranged: Dr. G. Senter will open the discussion with a general introduction to the subject, and there will be papers by Dr. G. Grube (Dresden) on some anodic and kathodic retardation phenomena and their bearing upon the theory of passivity; Dr. D. Reichinstein (Zürich) on interpretation of recent experiments bearing on the problem of the passivity of metals; Dr. H. S. Allen on photo-electric activity of active and passive irons. Communications will also be read from Profs. G. Schmidt (Münster), Max LeBlanc (Dresden), E. Shoch (Texas), and Günther Schulze (Reichsanstalt, Charlottenburg).

A PARIS telegram announces the death, in a state of destitution, of M. Charles Tellier, the inventor of the cold storage system, at eighty-six years of age. Appreciative accounts of M. Tellier's work appear in *The Times* of October 21, and are here summarised. Born at Amiens, he devoted himself to scientific research, and his experiments found a practical outcome in 1876, when the first experimental cargo of frozen meat left France for Buenos Aires in *Le Frigorifique,* which had been built under his direction with cold storage compartments. His invention met at first with little appreciation, but at the present day cold storage has not only changed completely the set of the world's food trade, but has deeply affected the economic development of many important nations. Although *Le Frigorifique* was M. Tellier's finest achievement, he did not cease from the early 'sixties on to his death to apply all his forces to the advancement of that scientific knowledge on which practical refrigeration depends. His two books, written in very early days, "Le Froid appliqué à la Bière," and "La Conservation de la Viande par le Froid," laid the foundation of our knowledge of cold storage, and they have been followed by numerous other publications and papers, setting forth, as he made them, the results of his researches.

IT is announced in the October number of *The Museums Journal* that the next meeting of the Museums Association will be held at Swansea, the special object of meeting at that town being to offer advice with regard to the work of a newly established museum and art institute. In a later paragraph of the same issue reference is made to the question of the future of the museums established and furnished by the late Sir Jonathan Hutchinson at Haslemere, Selby, and Charles Street, London. Although the founder is believed to have spent something like 30,000*l.* on these institutions, no provision for their future maintainance is made in his will, the executors being empowered to dispose of them in such manner as they think best. At a meeting held at Haslemere last week it was announced that Mr. Jonathan Hutchinson, writing on behalf of the trustees of Sir Jonathan Hutchinson's estate, had stated that if it were found possible to raise the necessary endowment fund, the trustees were willing to hand over by deed the freehold site and the museum with all its contents to a suitable trust committee. It was also intimated that other members of the Hutchinson family were prepared to give substantial monetary help to any fund which it might be proposed to raise. The value of the site at Haslemere is estimated by the trustees at about 4000*l.*

THE inaugural lecture for the newly founded lectureship in palæobotany at University College, University of London, was delivered on Friday, October 17, by Dr. Marie Stopes. Dr. Teall, F.R.S., the director of the Geological Survey, was in the chair. In the course of her lecture Dr. Stopes communicated the view that palæobotany is an independent science, though its main results are of particular service to botany, geology, or in practical mining. The first part of the lecture was devoted to a historical account of the subject, and a number of quotations were made from old books not generally known to palæobotanists. Historically the science has passed through three phases: the first when fossil plants were looked on as wanton ornaments, even at a time when animal fossils were recognised as being of organic origin; the second when plant impressions were drawn accurately and described, but without true understanding; the third when a scientific study of plant fossils revealed their importance in the conceptions of evolution and morphology of living plants, their value as "thermometers of extinct continents," and their importance to the stratigraphical geologist and coal miner. Dr. Teall said that he had been recently much impressed by the results of fossil botany, and expressed a hope that more students would give it careful attention. Prof. F. W. Oliver, F.R.S., in thanking Dr. Teall and the lecturer, said that he realised that the botanical side of palæobotany was not its only one; he agreed with the lecturer that palæobotany was an independent science, and he hoped before long to see a department of palæontology in the University.

ON Wednesday, October 15, a conversazione was held at King's College, by the Royal Microscopical Society, when nearly five hundred fellows and their friends were received by the president, Prof. G. Sims Woodhead. The object was to bring together, so far as practicable, a series of exhibits which would demonstrate the many uses to which microscopes may be put at the present time, both in science and commerce, and to enable those interested or engaged in microscopic work to demonstrate the methods they employed and the results they had obtained. The centre tables in the Great Hall of the college were occupied by pond-life exhibits, and more than forty microscopes were arranged under the direction of D. J. Scourfield. These were the centre of interest to a large number of visitors throughout the evening, many of the living objects being beautifully shown. Among the exhibits which also engaged the attention of visitors, that by F. W. Watson Baker, a demonstration of the actual grinding of a lens for a microscope objective, holds a high place. The subjects of other interesting exhibits were:—A beautiful series of slides showing wild flowers under opaque illumination, Conrad Beck; preparation of rock sections, C. H. Caffyn; an experiment with the Abbe diffraction microscope to illustrate the effect of altering the phase of one of the spectra forming on image of a grating, J. E. Barnard; transparencies in colour, E. Cuzner and T. E. Freshwater; colour stereoscopic slides of water mites, H. Taverner; an eyepiece micrometer with diffraction grating—an ingenious method of avoiding the errors common to most micrometers, J. W. Gordon; foraminifera, E. Heron-Allen and A. Earland; apparatus for stereo-photomicrography and also for high-power binocular observation, J. W. Ogilvy; fluorescent objects illuminated by ultra-violet light, Max Poser; and exhibits to illustrate differential colour illumination, J. Rheinberg. Two lectures were delivered during the evening, one by Dr. E. J. Spitta on diatom structure and a demonstration of the microscopic structure of rocks, by C. H. Caffyn.

SOME "Notes on the Struggle for Existence in Tropical Africa" are contributed to the current number of *Bedrock* by Mr. G. D. H. Carpenter, who spent nearly three years on the equatorial islands of Lake Victoria in studying the tsetse-fly on behalf of the Royal Society's Sleeping Sickness Commission. He emphasises the importance of studying mimicry under natural conditions rather than in the cabinet, and advances it as a strong argument in favour of the truth of the mimetic theory that the resemblance of one insect to another is explicable in exactly the same way as the resemblance of an insect to a dead leaf. On the theory of natural selection through minute variations, mimetic resemblances are simply a special case of coloration analogous to other special cases.

THE October number of *The Fortnightly Review* contains an article by Henri Fabre, the veteran naturalist of Sérignan, on his relations with Charles Darwin. The article illustrates in an interesting way some of the leading characteristics of these two remarkable men—the combined fertility and caution in speculation shown by Darwin, with his determination to bring every hypothesis to the test of experiment; and the unrivalled powers of observation possessed by Fabre, his enthusiasm in the pursuit of his favourite study, and the charm of his literary style. Darwin, being interested in the homing instincts of the mason-bees, suggested to Fabre the making of experiments to determine, if possible, whether this instinct was at all dependent on a perception by the insects of the direction in which they were first carried away from their nests. A whole series of trials was carried out by Fabre, the essential feature in which was the enclosure of marked bees in a dark box, the carrying of the box with its inmates in a direction opposite to that from which the release was to take place, and the repeated rotation of the box at different points of the route, in order to ensure that the captive bees should lose their bearings during the journey. The experiment was repeated, with variations, many times over, the almost uniform result being that from 30 to 40 per cent. of the liberated bees found their way home without difficulty. This was contrary to the expectation of both inquirers, and Darwin next proposed to try the effect of placing the insects within an induction coil, "a curious notion," as Fabre observes. The experiment was performed, with amusing results. But in the end the experimenter was fain to confess that the homing instinct of his bees remained a mystery.

The Gypsy Lore Journal (vol. vi., Part 4) is largely devoted to an account by Mr. E. O. Winstedt of "The Gypsy Coppersmiths' Invasion of 1911–13." Owing to the reticence displayed by these people, the origin of the party which visited England is uncertain. Some claimed to be Caucasians, others Russians, and many seem to have forgotten the place whence they started. Galicia seems to be the probable home of many of the immigrants. They appear to be genuine gypsies, their skin colour being practically identical with that of the Russian peasantry. In their metal work there are remarkable coincidences with Indian art products. This monograph contains a very complete account of their religious beliefs, organisation, dress, manners, and customs. The excellent work being carried out, with very limited resources, by the Gypsy Lore Society, which has its headquarters at 21A Alfred Street, Liverpool, should invite support from all who are interested in this remarkable race and from students of anthropology.

Recently the Prehistoric Society of East Anglia formed a committee to investigate the "Red Crag shell portrait" at present in the possession of Dr. Marie C. Stopes. The report of the committee has now appeared in the excellent Proceedings of that society (Part 3, vol. i.). The shell represents a typical Red Crag species, and bears the crude carving of a human face. The committee reported that "the weight of evidence was in favour of the Pliocene age of the human work on the shell . . . it was impossible to speak with absolute certainty on the point." One has only to glance at the other articles included in this volume to see how much and varied is the prehistoric research which is being carried out at present in East Anglia. Dr. Allen Sturge has applied Drayson's theory to explain the occurrence of periods of glaciation; a description is given by Mr. J. Reid Moir of worked flints from the mid-glacial gravel and chalky boulder clay of Suffolk; an account is written by Col. Underwood of Pleistocene bones and flint implements from a gravel pit at Dovercourt, Essex. The description of a Palæolithic site on Wretham Heath, near Thetford, by Dr. J. E. Marr, of Cambridge, is particularly interesting. Mr. W. G. Clarke contributes a paper on Norfolk implements of Palæolithic "cave" type. The Proceedings of the East Anglia Prehistoric Society contain matter which archæologists and anthropologists cannot afford to overlook.

A paragraph in Nature of October 9 (p. 175) upon a pamphlet recently issued by the National Equine Defence League, referred to a Bill to prohibit the docking of horses, printed at the end of the pamphlet, as having become law. The honorary secretary of the league writes to say that the Bill was abandoned last session in order to be amended, and will again be introduced next session. A clear statement to this effect might with advantage have been printed upon the same page of the pamphlet to prevent a mistaken conclusion such as was arrived at by our contributor. The honorary secretary will be pleased to forward any information upon the subject to anyone applying to him at Beaconsfield Road, New Southgate, London, N.

In No. 2014 of the Proceedings of the U.S. National Museum (vol. xlvi., pp. 93–102) Mr. C. W. Gidley gives a preliminary account of mammalian remains from a Pleistocene cave-deposit near Cumberland, Maryland. Lower jaws of a bear and a dog are described as new species—*Ursus vitabilis* and *Canis ambrusteri.* As the former differs from the American black bear (*U. americanus*) merely by the larger lower canines, it might well have been regarded as a race of that species. The latter is of the size of a wolf, but has the lower carnassial tooth approximating to that of a coyote or a jackal. In the legend to the figures on p. 100 and the first paragraph on the opposite page, no fewer than eight misprints are noticeable, one of which, namely *Hyscins,* for *Lyciscus,* is distinctly puzzling.

The size of litters and the number of nipples in swine forms the subject of an interesting paper by Messrs. G. H. Parker and C. Bullard in the Proceedings of the American Academy of Arts and Sciences, vol. xlix., No. 7. The authors have prepared a record of 1000 litters of unborn pigs of various breeds, and by means of tables arranged in order of the number of pigs in the litter are shown the relative position of the pig in the uterus, its sex, and the number and arrangement of its nipples. Of the total number of pigs examined 3024 were males and 2946 females, and in the whole population it was found that the nipples ranged from 8–18, with a mean of 12·2 and a mode of 12. In the majority (3559) the arrangement of the nipples was regular in character. No obvious relation would appear to exist between the size of the litter and the number of nipples in the females; though there may be as few nipples as eight and as large litters as fifteen, disadvantageous combinations of large litters borne by females with few nipples cannot be of frequent occurrence. Commonly there are about twice as many nipples, twelve, as young, six.

IN the course of an article, "The Transmutation of the Elements," in the October number of *Bedrock*, Dr. Norman Campbell deals with the apparent synthesis of neon out of helium and oxygen by Messrs. Collie and Patterson, which was described last February, as well as with Sir J. J. Thomson's observation that helium, hydrogen, and neon can be obtained from many solids by kathode-ray bombardment. Dr. Campbell takes the view that to apply the word "transmutation" to these processes is rather an unfortunate step, although it might be described as mere quibbling to say that the kathode rays do not produce transmutation when the results of transmutation can only be made evident by means of kathode rays. If gold could be "liberated" from lead by such bombardment, the amount so liberated would only be the amount accumulated by long ages of spontaneous disintegration, and would utterly fail to materialise the traditional idea of "transmutation."

VOLS. ix. and x. of the Collected Researches of the National Physical Laboratory maintain the high standard of excellence we have come to look on as natural in the work which issues from that institution. The present volumes cover the twenty-three papers published in the scientific or technical Press or in the proceedings of learned societies during the year 1912. One of the most important of the papers dealing with engineering problems is that on the properties of welded joints in iron and steel. It is found that acetylene welded joints are not so good as hand or electrical welded, and that while hand welded are somewhat better than electrical for alternations of stress, they are not so uniform in the results they give. Another important contribution to engineering knowledge is made in the report on the properties of alloys of aluminium and zinc. An extended series of tests leads to the general conclusion that the alloy containing 20 per cent. of zinc is the most promising. In electrical engineering the valuable papers on the properties of insulating materials and the circumstances which affect them supply much trustworthy information in a field in which uncertainty has reigned for too long a period. Other important facts are brought out in papers on the visibility of faint lights like those of vessels at sea, on photographic lenses and shutters, on the electricity emitted by carbon at high temperatures, and, lastly, that on a determination of the ohm by alternating-current methods, which has led to a result slightly less than the value at present accepted.

MESSRS. C. A. PARSONS AND CO., LTD., have despatched from their Heaton Works at Newcastle-on-Tyne the largest turbo-generator yet completed. An illustrated account of this machine appears in *Engineering* for October 17. The machine has been built to the order of the Commonwealth Edison Company of Chicago, a Corporation owning probably the greatest collective power-station in the world, and has been designed for a continuous load, at 750 revolutions per minute, of 25,000 kw., at a power factor of 0·95, the periodicity being 25 complete cycles per second. The steam consumption guaranteed is notable, and marks an epoch in steam plant. With steam at 200 lb. per sq. in., superheated to an extent of 200° F., and an absolute pressure in the condenser equivalent to 1 in., the guaranteed steam consumption at 20,000 kw. is 11·25 lb. per kw. output from the alternator; at 25 per cent. over or under the normal load, 11·65 lb. per kw. output; and at half-load, 12·5 lb. per kw. output. The steam consumption guaranteed for this turbine set—the largest ever fitted to a single shaft—is equal to ·8·1 lb. per shaft-horse-power per hour, *a result not hitherto attained in* marine practice. Were oil fuel used in the boiler furnaces of a marine plant having this steam consumption, the fuel used would amount to 0·6 lb. per shaft-horse-power per hour, a result nearly comparable, from the point of view of radius of action in warships, with that attained by internal-combustion engines.

THE ninth half-yearly volume of the Journal of the Institute of Metals contains the presidential address of Prof. Huntington and some half-dozen papers of considerable scientific and technical interest, read at the spring meeting of the institute. These include a paper by Mr. Alexander Siemens on metal filament lamps, papers on corrosion by Mr. Arnold Philip and by Dr. G. H. Bailey, a paper on the microstructure of German silver, by Mr. O. F. Hudson, and papers on the heat treatment of alloys by Mr. G. H. Gulliver and by Messrs. H. S. and J. S. G. Primrose. The excellent photomicrographs which illustrate the presidential address and three of the papers are a noteworthy feature of the present volume.

MESSRS. NEWTON AND CO., 72 Wigmore Street, London, W., have issued new catalogues giving full particulars of the optical lanterns, kinematographs, and projection apparatus which they able to supply. The sectional catalogues now published separately by this firm will prove a great convenience, as it will be possible easily to keep each up to date. Among these catalogues those describing the new science lanterns and the arc lamps deserve special mention. These instruments are the result of many experiments, and deserve the careful attention of lecturers and science teachers.

THE October issue of Mr. C. Baker's list of second-hand scientific instruments contains particulars of more than two thousand pieces of scientific apparatus. Each instrument is guaranteed to be in working order, and the majority are in new condition. Especial attention may be directed to section 1 of the catalogue devoted to microscopes and accessories, of which a fine collection is available for selection.

AT the head of the review of "The British Parasitic Copepoda" in NATURE of October 16 (p. 193) the price of the work was erroneously given as 15*s*. The secretary of the Ray Society writes to point out that this is the price of vol. i. only; and that the price of vol. ii. is 25*s*. The price of the complete work is, therefore, 40*s*. net.